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NATIONAL VETERINARY MEDICAL ASSOCIATION

PRESIDENT'S NEW YEAR MESSAGE TO MEMBERS

To All Members of the National Veterinary Medical Association

IT is difficult to realise that it is twelve months since I sent a New Year's message to members of the Association and yet probably never before have events moved so rapidly in so short a time. One's whole outlook on life and one's conception of the future has been radically altered. This is probably as true in respect of the veterinary profession as in any other calling.

Twelve months ago it was still uncertain what part our profession would be called upon to play in the prosecution of the war; now, however, it is abundantly clear that our main function must be to assist in every possible way the increased production of milk and meat by the maintenance of the health of livestock and by the control of those diseases which take such a toll of them. The success of our efforts is essential to the successful prosecution of the war. The Minister of Agriculture said on Tuesday last, "There is no more vital sphere of war effort than increased food production in our own island."

My New Year's message this year is contained in Section I of the Report on Diseases of Farm Livestock prepared by the Survey Committee and published in this issue of the *Veterinary Record*. I trust that every member of the Association will read, mark, learn and inwardly digest it.

Only those who have been intimately concerned with the preparation of this Report can possibly know the immense amount of work and concentrated effort which its compilation has entailed. In addition to the numerous meetings of the Survey Committee, at which evidence was heard and full and free discussion took place, many hours, often far into the night and early morning, have been spent in sifting and assessing the material, drafting and redrafting, in order that the Report should be worthy of the Association. For this Report, the profession owes a debt of gratitude to the Survey Committee and I, personally, should like to take this opportunity, at the time of the publication of Section I, to express my thanks to all its members and in particular to those who gave up so much of their time, often at great inconvenience, for, without their devoted help, my ambition to have this important section completed by the end of 1940 could never have been achieved.

The Report has been unanimously approved by Council, and Branches and Divisions of the Association are asked to consider it in the immediate future, together with the suggested scheme for implementing the recommendations contained therein. All I would ask of members is that in their discussions they should consider what is best in the national interest at this time, rather than whether the scheme is to their own individual advantage.

The idea of a "panel" system was for a long time abhorrent to me, and it doubtless still is to many others, but I am satisfied after very full and mature consideration that in relation to preventive medicine, it is the only solution open to us as a profession—though possibly not as individual members—if we wish to be responsible for the control of disease in farm livestock—cattle, sheep, pigs and poultry.

If we, as a united profession, do not seize this opportunity now, we shall be doing a disservice to future generations of veterinarians and we shall see disease control parcelled out among the allied sciences and

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other parties interested in agriculture who are less qualified than ourselves to do the job. We need the assistance of all these bodies but it must be the veterinary profession which co-ordinates their efforts; this view was accepted—indeed, was emphasised—by the non-veterinary members of the conference recently convened by the Agricultural Research Council.

Recent events indicate that we are assured of the active support of the Agricultural Research Council, the sympathetic consideration of the Animal Health Division of the Ministry of Agriculture, the assistance of interested members of the House of Commons, and I do not doubt that the livestock industry will welcome the Association's determined effort—the first that has ever been made—to control disease on a major scale.

The coming year will, I believe, mark the beginning of a new era for the practice of veterinary science. The tackling of this gigantic task successfully will necessitate the employment of every available member of the profession. It is up to us—each of us—to prove that we can "deliver the goods." If we can, then the issue is not in doubt. We shall render an immeasurable service to the nation in the most critical period of her history. I am confident that we shall succeed.

The "N.A.R.P.A.C." ship has sailed upon troublous seas; at the present moment its skipper and two of its crew have threatened to desert; vain attempts have been made both to torpedo and to scuttle the ship. The veterinary profession will not allow the vessel to be wrecked upon the rocks of intrigue, jealousy and suspicion, nor allow it to become submerged in whirlpools of selfish publicity. I am confident that with the Association at the helm, the "N.A.R.P.A.C." ship will ultimately be brought safely to port.

Last week at a special meeting, the Council regretfully but unanimously rejected the suggested scheme for the reorganisation of the National A.R.P. for Animals Committee submitted by the Ministry of Home Security. The Association is prepared to submit alternative suggestions to solve the present difficulties. We have an unrivalled claim for consideration in that we are the only body of professional men giving its time and skill gratuitously in the service of the country. Moreover, we have within the profession and available to the profession the requisite personnel to carry out the functions of the National A.R.P. for Animals Committee.

Owing to the enemy's continued aerial activity, it is becoming increasingly difficult to hold regular or representative meetings and, as a result, more and heavier responsibilities devolve upon the Officers of the Association—particularly upon myself as President: I would ask members, therefore, to exercise patience and, if they cannot always be as fully consulted as they would wish or as they would be in normal times, to have confidence in those whom they have themselves elected.

In conclusion I would like to express my grateful thanks for the loyal and unstinted help which has been given me by my fellow officers, colleagues and members of the permanent staff and to express the hope that at the end of 1941 we, as a profession, may be able to look back and feel that we have accomplished a great work, worthily done.

A. W. Steele Hodge.

January 1st, 1941. *President.*

NATIONAL VETERINARY MEDICAL ASSOCIATION

REPORT ON DISEASES OF FARM LIVESTOCK*

SECTION I

Some Diseases of Cattle: Report and Recommendations

General Introduction

"The veterinary practitioner is the physician of the farm and the guarantor of the nation's food supply. His established title of veterinary surgeon obscures his more important functions, which are not only to cure diseases among farm stock, but also to check the spread of disease, to eradicate it when established, and by advice on breeding and on nutrition to build up a stock as resistant as possible to disease."

The considered statement reproduced above is to be found in the preamble of the Report of the Inter-departmental Committee on Veterinary Education (1938). It implies responsibilities which veterinarians fully accept.

Diseases are raging among the livestock of this country, exacting a toll upon the nation's food at a time when this can ill be spared. The National Veterinary Medical Association has long been seriously disturbed by the extent of the losses and has been concerned to ascertain the best means to control them. Although there is a wealth of knowledge now available in the veterinary profession which would enable many of these diseases to be controlled there is little sign of energetic organised effort being made to apply this knowledge.

The National Veterinary Medical Association consequently formed a Survey Committee specially to review the existing situation and particularly to ascertain the methods that are now applicable for the rational control of disease. At many meetings witnesses with expert knowledge in veterinary and allied sciences were consulted and the position in regard to each disease has been thoroughly investigated.

The Survey Committee, after preliminary discussion, decided to prepare two separate though related policies for disease control :—

(1) A short-term policy which would embrace problems in disease control needing urgent solution and likely to yield immediate benefits ;

(2) A long-term policy which would be concerned with the application of developments in veterinary knowledge as part of a continuous plan for the future benefit of agriculture.

The Committee maintains that concerted action to prevent losses from disease among livestock is needed now more than at any time in our previous history. The country can afford no longer to maintain animals that are of low productivity and are a constant menace to healthy stock.

Under present circumstances the cause of severe losses is not recognised by the farmer or brought usually to the notice of the veterinary practitioner until disease has become advanced in individual animals and has spread extensively in the herd. In this type of disease, which is insidious in onset, signs of ill-health can be readily recognised only at a late stage after infection ; control then becomes correspondingly more difficult and treatment as a rule less successful. It is the general experience that much loss is prevented when, as in the best managed herds and flocks, professional advice is regularly sought. In this way disease can be diagnosed as soon as possible and appropriate measures for controlling its spread, and for its treatment, applied early. The Committee has formulated a scheme whereby such a practice can be extended to all herds and flocks in the country. It has borne in mind that with the prevailing conditions of war, it is necessary to draft plans capable of immediate application, causing the least possible disturbance to the livestock industry, and yet offering good prospects of bringing about a decided and early improvement.

The following special reports and memoranda have been prepared in support of the Committee's recommendations. Section I deals with matters of immediate concern and recommendations which, if implemented, are likely to give early results.

Section I

Some Diseases of Cattle: Report and Recommendations

The wastage caused by disease among dairy cattle in this country is colossal. The Economic Advisory Council's Committee on Cattle Diseases (1934, Report, page 87) stated : "The milking life of a dairy cow is only half that which might be

*Prepared by the Survey Committee of the National Veterinary Medical Association of Great Britain and Ireland.

expected under ideal conditions. . . . Fifty-eight per cent. of the cows passing out of herds are disposed of on account of disease, and the loss of many of the remainder is indirectly attributable to disease." The Committee on Veterinary Education in their Report which was published later (1938) stated that the total loss from disease among farm livestock was estimated at 19 million pounds sterling annually, two-thirds of which, that is nearly 13 million pounds, was accounted for by disease among cattle.

The Survey Committee of the National Veterinary Medical Association has examined afresh the extent of the loss caused by disease among dairy cattle. From the evidence submitted by research workers and veterinary practitioners with special experience in the subject the Committee has been forced to conclude that the diseases in question are to-day more prevalent, and the losses caused by them higher, than they were stated to be in the above-mentioned Reports. If no organised effort is made to control these diseases in the immediate future, the position is likely to deteriorate further. The Committee estimates that the annual monetary loss suffered by the nation as a result of mastitis, contagious abortion, sterility and Johne's disease alone, is not less than 15 million pounds sterling.

The losses are attributable in part to modern intensive methods of management and increased traffic in animals but, in the main, to a failure to apply known methods for the control of these diseases.

If the recommendations made by the Committee are implemented, not only will the economic loss to the farmer and the country be materially reduced, but our livestock resources will be conserved and supplies of milk and meat increased; this at a time when increased home production of food is vital to the well-being of the nation.

The threatened shortage of animal feeding-stuffs need not be unduly stressed, but it is essential to emphasise that the use of foodstuffs in maintaining animals of low productivity is uneconomic.

At the outbreak of this war the veterinary profession was placed in the Schedule of Reserved Occupations so that its members might be available to deal with animal diseases or any emergency which might arise therefrom. It became obvious, however, that no matter how important those duties might turn out to be, the veterinary profession could play an even more important part in the interests of the nation by applying its science and art to the preservation of health in livestock and to the maximum production of milk and meat.

As stated in the General Introduction, the Survey Committee decided, after preliminary discussion, to prepare two separate but related policies for disease control :—

(1) A short-term policy which would embrace problems in disease control needing urgent solution and likely to yield immediate benefits.

(2) A long-term policy which would be concerned with the application of developments in veterinary knowledge as part of a continuous plan for the future benefit of agriculture.

The following summary outlines the Committee's recommendations in respect of mastitis, contagious abortion, sterility and Johne's disease.

. . . . . .

A. Mastitis

Recent advances in our knowledge upon this disease show that several methods of diagnosis are now available. Three methods are recommended, the choice depending upon the circumstances in which each particular herd is maintained.

The methods are: (1) The regular use by the farmer of indirect methods of recognising mastitis, *e.g.* by the strip-cup test. The value of this method is limited.

(2) Routine clinical examination of the udders of all cows and heifers by the veterinarian, together with the use by the farmer of the indirect methods of testing, supplemented by a laboratory examination to determine the type of infection in the herd.

(3) Routine clinical examination of the udders of all cows and heifers by the veterinarian and the regular use of the strip-cup by the farmer together with the periodic laboratory testing of milk samples from each quarter. This method is limited in application because of the cost of laboratory examinations, and can only be recommended for selected herds.

Once diagnosis is established, control measures can be introduced. Affected cows must be segregated and appropriately treated. The practices of good herd management and modern dairy hygiene must be operative.

Successful methods of treatment are available which can be divided broadly into two classes, namely, local treatment of the affected udder by irrigation and general treatment of the patient by the administration of special drugs.

It is recommended that there should be a regular quarterly routine examination by the veterinarian of all dairy cows, to facilitate the early detection of mastitis and to allow the earliest possible introduction of appropriate measures for its treatment and control. The farmer should regularly use the strip cup.

B. Contagious Abortion

Whilst the ideal to be aimed at is area, and eventually national, eradication, this is impracticable as an immediate measure. It is recognised that a number of herds exist from which contagious abortion has been eradicated by methods of segregation, and elimination of reactors detected by systematic blood testing.

It is recommended that facilities for blood testing should be continued and extended for the purposes of eradication of contagious abortion from suitable herds.

The Committee, from the evidence presented to it, is of the opinion that control by vaccination is practicable. Vaccination has been applied as a preventive measure for several years in badly infected herds and it has proved to be of considerable value. Many of the living vaccines employed

have proved to be already attenuated in their virulence but they are not yet standardised.

It is recommended that vaccination should be encouraged in these herds and that all vaccines should be of standardised virulence.

Good results have been obtained from the inoculation of young heifers with living vaccines. The animals appear to derive a high and probably a lasting immunity. The majority cease to react to the agglutination test a short time after inoculation, 99 per cent. being found not to react when they have reached calving age. This indicates that they no longer harbour the causal organism of abortion, whether of vaccinal or natural origin, or excrete it in the milk. They are consequently not a source of danger to susceptible cows or to the human community.

It is recommended that when circumstances permit, the inoculation of living vaccines should be carried out in young heifers, preferably between the ages of four and eight months. These heifers should be kept apart from the main herd until they calve.

Recently, an attenuated living vaccine of standardised virulence which is believed to be free from undesirable qualities and to evoke a reasonable degree of immunity against field infection, has been developed by a British worker.

It is recommended that an extensive field trial should be made with this vaccine upon herds kept under adequately controlled conditions.

C. Sterility

The Committee is profoundly impressed with the enormous loss in milk and calf production caused by temporary infertility and by sterility. From the evidence before it, the Committee is satisfied that 80 per cent. of this loss is preventable.

It desires to emphasise that the accurate diagnosis and proper treatment of sterility demand a high degree of professional skill. To achieve the maximum results in the control of this disease, prompt and appropriate treatment is essential, and the veterinary practitioner must be brought into earlier and closer contact with his cases than is customary or is in fact regarded as economically practicable under ordinary average conditions.

It is recommended that the stockowner should keep accurate herd records and that the veterinary practitioner, to whom these records should be available, should carry out regular periodic examinations of every breeding animal in the herd, and where necessary, apply treatment.

D. Johne's Disease

The incidence of Johne's disease throughout the country has not been ascertained, but the losses due to it are certainly high in some districts. Cattle may be infected although showing no clinical symptoms thereby constituting a danger to susceptible stock. Calves and young cattle are especially susceptible to Johne's disease and may harbour infection for considerable periods before clinical symptoms become evident. Pastures are readily contaminated and ponds and other drinking places are a common source of infection following their soiling with contaminated faeces.

It would appear that by the use of the diagnostic agent, johnin, animals in the early stages of infection can be recognised. Their elimination from the herd, together with the adoption of good farm management and hygiene, has been successful in controlling the disease.

It is recommended that in suitable herds testing with johnin of known specificity and proved potency should be practised; positively reacting cattle should be segregated: clinically affected animals should be slaughtered. Young stock should be reared apart from adult cattle and separate pastures provided. Contaminated pastures should not be grazed by cattle for at least twelve months.

THE ESTIMATED COST TO THE NATION OF MASTITIS, CONTAGIOUS ABORTION, STERILITY AND JOHNE'S DISEASE

As already stated, after a careful review of the available data the Survey Committee estimates that the annual monetary loss suffered by the nation as a result of mastitis, contagious abortion, sterility and Johne's disease alone, is not less than 15 million pounds sterling.

Loss of Milk due to Disease of Cattle.

The extent of the loss of milk due to the presence of disease in milch cows is not fully realised either by the industry itself or by the general public.

At present the number of cows in milk in Great Britain is 3,200,000. Assuming that the average annual yield of milk per cow is 500 gallons the annual production of milk would be 1,600,000,000 gallons.

This represents a monetary value, reckoning the average wholesale price of milk to be 1s. 3d. per gallon, of £100,000,000 per annum.

This sum represents the estimated monetary value of milk to the producers accruing from the existing cow population. This value could be considerably augmented if mastitis, contagious abortion and sterility could be brought under control.

Mastitis alone reduces materially the amount and quality of the milk available for consumption by the public. Thus, accepting the conservative estimate that 25 per cent. of the total population of cows in milk are affected with mastitis and that the annual milk yield from affected animals is reduced by 12 per cent., then

the number of cows affected with mastitis =800,000; and

the loss of milk yield per cow per annum = 60 gallons.

The total annual loss of milk due to mastitis =48,000,000 gallons, which represents an annual monetary loss (with milk at 1s. 3d. per gallon) of £3,000,000.

These are conservative figures; the actual loss must be much greater.

Contagious Abortion.—It is reliably stated that the loss of milk due to abortion taking place at eight months is 25 per cent.; earlier abortion increases this figure which approaches 50 per cent. when abortion occurs at three months. Accepting that 10 per cent. of all calves are prematurely born, the number of cows aborting annually is 320,000. Taking the minimum figure of 25 per cent. as average loss of milk, the annual loss of milk resulting from these abortions is $\frac{500}{4} \times 320{,}000 = 40{,}000{,}000$ gallons. This, at 1s. 3d. per gallon, represents a monetary loss of £2,500,000.

Sterility.—The loss of milk due to the presence of sterility and temporary infertility in dairy cattle is not so readily determined, but an approximate and minimal value can be calculated upon the basis that it takes a cow, temporarily infertile, 13 months to produce the same amount of milk as a healthy cow produces in ten months. These are average figures, the former being based upon the assumption that the average delay in conception arising from the presence of temporary infertility is only three months. The average annual yield of milk per "sterile" cow is therefore $\frac{10}{13}$ of that of the healthy cow, *i.e.*, $\frac{10}{13} \times 500$ gallons. The loss of milk is thus $\frac{3}{13} \times 500$ gallons per affected cow. The number of cows, temporarily infertile, ranging from 2 to 18 months is given as 30 per cent.

The number of affected cows is therefore 960,000, and the annual loss of milk is $\frac{3 \times 500 \times 960{,}000}{13}$ = 110,769,230 gallons, which represents a monetary loss of £6,923,076, say £7,000,000.

It is not possible to estimate the loss of milk due to Johne's disease but **it is clear that the four diseases under consideration result in an annual loss of approximately 200,000,000 gallons of milk, equivalent to an annual monetary loss of £12,500,000.**

Losses due to Reduced Numbers of Calves.

The loss due to a reduction in the calf crop consequent upon these diseases can be calculated as follows.

Mastitis.—Estimated number of cows which are "fed out" of the herd or which die because of mastitis annually = 10 per cent. of affected animals, *i.e.*, 10 per cent. of 800,000 = 80,000 cows. The annual loss of calves can therefore be taken as 80,000. Assuming the value of a calf to be 50s. the annual sum lost to the country is £200,000.

Contagious Abortion.—It is estimated that 10 per cent. of all calves are born prematurely or dead, *i.e.*, 320,000 cows abort annually. Reckoning the monetary loss to be 50s. per calf, the annual cost due to the loss of calves is £800,000.

Sterility.—It is estimated that 30 per cent. of dairy cows are temporarily infertile, *i.e.*, 960,000 cows are affected. If it is assumed that the average time lost due to this cause is three months, this means a loss of a calf by every affected animal in every four years, or alternatively that 240,000 calves are lost annually. The cost of this to the country is £600,000.

The annual monetary loss due to the reduced number of calves arising from mastitis, contagious abortion and sterility is, therefore, not less than £1,600,000.

Losses arising from the Need to Replace Diseased Cows.

It was estimated by the Cattle Diseases Committee as the result of an extensive survey of dairy herds that the annual wastage of dairy cows from all causes was 22½ per cent. and that 20 per cent. of this was due to mastitis, contagious abortion and sterility; that is to say, that 4·5 per cent. of 3,200,000 dairy cows must be replaced annually. Assuming the loss per head arising from this cause to be £25 (cost of healthy dairy cows = £42·5, value of diseased animal "fattened out" = £17·5), the total loss is $\frac{25 \times 3{,}200{,}000 \times 4{\cdot}5}{100}$ = £3,600,000.

The annual monetary loss arising from the replacement of dairy cows suffering from mastitis, contagious abortion or sterility is therefore £3,600,000.

It is not possible to assess the loss due to Johne's disease, as no reliable figures are available as to its incidence.

Total monetary loss per annum from the above diseases, including that due to the great reduction in milk yield, may be tabulated as follows:—

	£
Value of milk lost due to Mastitis ...	= 3,000,000
" " " " Contagious abortion	= 2,500,000
" " " " Sterility ...	= 7,000,000
" calves " " Mastitis ...	= 200,000
" " " " Contagious abortion	= 800,000
" " " " Sterility ...	= 600,000
Monetary loss due to replacement of dairy cows affected with mastitis, contagious abortion or sterility ...	= 3,600,000
	£17,700,000

Thus the diseases included in this report result in a monetary loss to the country of over £17,000,000 per annum. This, as a conservative figure, excludes any loss due to Johne's disease.

Many of the above calculations are based upon figures giving the incidence of disease as that prevailing prior to 1934, but from the evidence submitted to it the Committee is convinced that the incidence of each of these diseases to-day is considerably higher than it was then. Furthermore, the calculations with respect to losses have been based upon minimal figures. **In the view of the Committee a more**

accurate estimate of the annual monetary loss due to these diseases would be £20,000,000.

Food Lost to the Nation owing to the Presence of Mastitis, Contagious Abortion and Sterility.

It has been shown above that the volume of milk produced in this country could be materially increased if the diseases referred to could be eliminated. Forty-eight million gallons are lost because of mastitis and 150 million gallons because of contagious abortion and sterility. **Thus the elimination of these three diseases would increase the annual milk production of the country by 198 million gallons.**

The loss may be expressed as loss of solids-not-fat and loss of butter fat. Reckoning that a gallon of milk weighs 10 lb., and that normal milk may be taken as containing 8·7 per cent. of solids-not-fat and 3 per cent. of butter fat, there is a loss to the consuming public of $\frac{198,000,000 \times 10 \times 8{\cdot}7}{100 \times 2,240} = 76,812$ tons of a solid protein-sugar-mineral mixture and $\frac{198,000,000 \times 10 \times 3}{100 \times 2,240} = 26,428$ tons of butter fat.

This does not represent the whole loss. Much of the milk from affected cows is changed in chemical composition and is of lowered nutritional value. Infection with *Str. agalactiae* (the common cause of mastitis) markedly reduces the solids-not-fat content of milk. The loss in nutritive value to the human population may be calculated from the following figures:—

Estimated number of cows affected with *Str. agalactiae* mastitis = 800,000.

Estimated average annual yield of each of these cows = 440 gallons.

Total annual yield of milk is therefore 352,000,000 gallons.

It is known that this milk contains a smaller proportion of solids-not-fat than does normal milk, an average percentage being 8·3 instead of 8·7. A gallon of milk being reckoned to weigh 10 lb., there is therefore a loss of 4 lb. of solids-not-fat in every 100 gallons of milk from the cows affected with mastitis caused by *Str. agalactiae*.

The annual loss in this respect to the consuming public amounts therefore to $\frac{352,000,000 \times 4}{100 \times 2,240}$ = 6,286 tons of solid food. The nutritive value of the total sugar-protein-mineral concentrate thus lost to the nation through these three diseases is, therefore, approximately 83,000 tons.

Furthermore, there is a considerable loss of fat. The butter-fat of the milk from affected quarters is reduced by about 25 per cent. which gives an estimated loss of over 5,000 tons annually. The total loss of butter-fat due to these three diseases is, therefore, approximately 31,000 tons.

It is clear, therefore, that owing to the diminution in the yield of milk and to the impaired quality of milk from diseased animals, there is a loss to the nation arising from the presence of mastitis, contagious abortion and sterility of over 83,000 tons of a solid mixture of protein, sugar and minerals, and a loss of over 31,000 tons of butter-fat.

MASTITIS IN DAIRY COWS

Introduction

There are several distinct forms of mastitis which affect dairy cows in Great Britain. Different kinds of micro-organisms act as the determining cause of the forms of mastitis and in some cases more than one type of micro-organism may be found in the udder tissue or in the milk secreted by the affected udder.

Experts with wide experience of all forms of mastitis who gave evidence before the Committee agreed that those responsible for the greatest amount of loss in milk production are the following:

(1) Mastitis caused by *Streptococcus agalactiae.*
(2) Mastitis caused by Staphylococci.
(3) Mastitis caused by *Corynebacterium pyogenes.*
(4) Mastitis caused by streptococci other than *Str. agalactiae.*

Infection with *Str. agalactiae* accounts for 80 to 90 per cent. of all cases of mastitis, whether clinical or sub-clinical, and is responsible for the greatest annual loss in milk.

The Prevalence of Mastitis Caused by *Str. agalactiae* in Great Britain.

In the absence of a country-wide survey of the incidence of this form of mastitis, the total loss caused by it cannot be accurately computed. The disease is far more widespread than is generally appreciated. The incidence varies greatly and may reach almost 100 per cent. in badly infected herds. Experienced workers agree that between 20 and 30 per cent. of all cows producing milk suffer from mastitis, often in a sub-clinical form, which is seldom recognised by the owner.

It is possible even in herds which are free from clinical mastitis to demonstrate the presence of the streptococci. The milk in such cases may occasionally contain clots. If the udder or teats suffer injury or if other unfavourable conditions arise, the organisms may rapidly multiply and the case become a clinical one with obvious changes in the milk. In this way the disease may progress from a sub-clinical or latent state to an acute form. In addition, many cows may become affected through the spread of infection from either clinical or sub-clinical cases. This state of affairs is unwarranted, for methods of control are available.

Other Forms of Mastitis.

These forms may be dealt with together for convenience, although they differ greatly in incidence, clinical form and severity. They include infections of the udder with staphylococci, *C. pyogenes* ("summer mastitis") and streptococci other than *Str. agalactiae*. Generally speaking, these infections

give rise to mastitis in an acute clinical form, particularly in the case of staphylococcus infection, which may terminate in the death of the cow.

The gross loss of milk to the consuming public due to these infections is by no means negligible. Their main importance, however, lies in the serious loss they cause to individual stockowners upon whose premises they occur.

Measures for the Control of Mastitis due to *Str. Agalactiae*

Diagnosis.

Experts are unanimously agreed that the fundamental principle for the control of the disease is early and accurate diagnosis based upon the following methods: —

(*a*) Indirect tests.
(*b*) Routine clinical examination by the veterinary practitioner.
(*c*) Bacteriological examination of milk samples at the laboratory.

(a) *Simple indirect tests* can be undertaken as a routine measure by those who are conversant with the technique. Unless some ready method for determining the presence of infection is adopted as a routine procedure, infected cows are often not detected until clinical symptoms are present. The most practicable of these indirect tests is the use of the "strip-cup" to examine the foremilk for the presence of clots or other gross changes. Some 40 to 50 per cent. of early cases can be detected by means of this test provided it is applied intelligently and as a routine measure. After detection of the disease the affected cow should be segregated and treated. Owners should be instructed in the application of this test by the veterinary and agricultural advisory services and by veterinary practitioners, in order to ensure its wider adoption.

(*b*) *Routine Clinical Examination.*—When the use of the strip-cup is combined with routine clinical examination of all cows in a herd by a veterinary surgeon, a greater number of cases of early mastitis is detected than by the use of the strip-cup alone. Palpation of the udder may reveal suspicious and early clinical cases of the disease. Moreover, it is difficult to exaggerate the value of clinical examination in the detection of tuberculous mastitis.

The above examinations should be supplemented with laboratory tests. For this purpose, the veterinary surgeon would take samples of milk from selected cows for transmission to the laboratory. The laboratory examination would provide accurate diagnosis in doubtful cases and identification of the causal organism responsible for infection, whether in an individual cow or in the whole herd. The information forthcoming in this way would be interpreted to the best advantage by the clinician familiar with the herd and, as a sequel, the most suitable measures for control and treatment could be introduced.

(*c*) *Bacteriological examination of milk samples* has been undertaken for several years at certain institutes. A greater degree of accuracy in diagnosing mastitis can be obtained by laboratory testing of milk from separate quarters of the udder at regular intervals but owing to the high cost of this method its application is necessarily limited to selected herds.

Treatment.

After early recognition of the disease, early treatment must play a part in any scheme of control. The Committee is satisfied that appropriate treatment should be the responsibility of the veterinary practitioner. Two methods of treatment have been attended with such measure of success that they can now be recommended for general use: —

(*a*) Treatment of serious and acute clinical cases by the administration of drugs of the sulphonamide group. At least 60 per cent., and in some herds up to 90 per cent., of these cases are cured clinically by the *proper* use of these drugs.

(*b*) Irrigation of the udder in sub-clinical, early clinical and chronic cases with a solution of one of the acridine compounds. A single irrigation will render the udder tissue bacteria-free in up to 50 per cent. of sub-clinical and early clinical cases. A second irrigation, carried out a week later, increases the cures to 70 per cent. This treatment should be undertaken preferably at the stage when the cow is "going dry." In herds where the incidence of recognisable mastitis exceeds 50 per cent. it is recommended that the udders of all cows should be so irrigated.

In some refractory cases of mastitis a combination of the above two methods of treatment has produced good results.

The evidence in favour of vaccine therapy in streptococcal infections is not definite; no recommendations for its use can be made until further results of research are available.

Measures for the Control of the Other Forms of Mastitis.

Injection of an antiseptic emulsion into the teat canal or the use of a teat seal may prevent mastitis in dry cows (so-called "summer mastitis").

Work in progress indicates that the use of the specific toxoid may be of value in the treatment and control of mastitis caused by *Corynebacterium pyogenes* or by staphylococci.

Recommendations

Mastitis, whatever its cause, can only be effectively controlled if infected cows are separated from healthy animals. Where a separate cowshed cannot be provided for the infected animals they should be segregated at one end of the common cowshed; and, in any event, they should be milked last. All cows entering the herd should be isolated until they have been found to be free from mastitis infection. The management of the herd and dairy should conform

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to the teachings of modern hygiene. Without a properly organised scheme it is impossible for veterinary practitioners to control mastitis on a national scale. Successful and economic treatment depends primarily on early recognition of affected cows. Under present conditions, cattle owners do not, as a rule, call in professional assistance sufficiently early: they often fail to realise that mastitis exists until a considerable number of animals is affected.

After a full consideration of the whole problem, the Committee is of the opinion that the adoption of a vigorous and progressive policy of control with active co-operation by all concerned will result in a marked diminution in the present wastage from mastitis—thereby achieving results of immense and increasing value to agriculture and to the health of the public.

It is recommended that there should be a regular quarterly routine examination by the veterinarian of all dairy cows, to facilitate the early detection of mastitis and to allow the earliest possible introduction of appropriate measures for its treatment and control. The farmer should regularly use the strip cup.

CONTAGIOUS ABORTION

INTRODUCTION.

Contagious abortion, or Bang's disease, is caused by a specific micro-organism, *Brucella abortus*, the common method of infection being by ingestion. As a result of the infection a disturbance of the foetal circulation may occur which may cause death of the foetus and its subsequent expulsion. Sometimes at full term or nearly full term a live calf is born which may or may not survive; in these cases the foetal membranes are frequently retained by the cow. Sometimes, the infection cannot be recognised without laboratory examination. It is the usual experience that cows which have aborted once become less prone to abort at succeeding pregnancies. Some abort a second time, fewer of these again on three or more occasions. However mild the disturbance, the infected cows continue to harbour infection and are a source of danger to healthy cattle. Infected cows whether or not they have aborted become carriers of infection and continue to react to the agglutination test for an indefinite period. Infection of the uterus with *Brucella abortus* injures the lining membrane and lowers its resistance to invasion with other micro-organisms, which may set up a mild catarrhal inflammation of the membrane leading to infertility. If this condition remains untreated, a chronic or progressively severe infection may result which will render the animal permanently sterile. The loss to the dairying industry from sterility attributable to this origin deserves in itself serious attention.

METHODS OF CONTROL

The following methods are available: —

(*a*) Eradication by segregation of the infected from the healthy cattle based upon periodical testing of samples of blood from all cattle in a herd for evidence of infection.

(*b*) Preventive inoculation.

(*a*) ERADICATION BASED UPON THE RESULTS OF BLOOD TESTING.

The successful control of the disease by this method necessitates the submission of a sample of blood from each animal in the herd to the agglutination test; the segregation or isolation, and preferably, the ultimate elimination of all reactors; and the retesting of non-reactors at regular intervals. New arrivals must be isolated until they have passed at least two tests at a specified interval before they are allowed to enter a herd. Moreover, should they be close to calving, they must be isolated and not introduced into the herd unless a negative reaction has been obtained to a blood test not earlier than one week after calving. All non-reacting animals in the herd should be isolated prior to parturition, and not re-admitted into the herd unless they pass an agglutination test not less than one week after calving. It is essential to adopt good hygienic precautions to prevent the introduction of, and lessen the chances of spreading, infection. The disease has been eradicated from a number of herds and its re-introduction prevented, where all these measures have been carried out with meticulous care; but in other herds from which the disease has been eliminated re-infection has occurred in spite of the observance of all reasonable precautions.

(*b*) PREVENTIVE INOCULATION.

From time to time killed vaccines have been produced by various methods in this and other countries, but no such vaccine has yet been found capable of inducing an immunity likely to protect cows against average field infection. The Committee was unable to obtain evidence to show that cultures of *Brucella abortus* attenuated by chemical substances, *e.g.*, formalin, iodoform, chinosol, etc., are of value in the control of contagious abortion.

For many years attempts have been made to control abortion in herds by the use of a vaccine prepared from living virulent *Brucella abortus* cultures. The object of vaccination is to prevent the major loss from actual abortions, infection in the herd not being controlled or prevented.

As originally recommended, heifers are vaccinated two months before service so that immunity is set up before the onset of pregnancy. No attempt is made to control the existing natural infection in the herd. (It is now well known that some strains of *Brucella abortus* propagated a long time in laboratories may be of such low virulence that they fail to induce abortion in females inoculated during pregnancy). Some vaccinated animals continue to harbour *Brucella abortus* of vaccinal or natural origin and thus become potential sources of infection to non-infected or unvaccinated animals: in the meantime they continue to react to the agglutination test.

A modified system of vaccination with living cultures has now been evolved in which young heifers, four to eight months of age, are vaccinated and kept separate from the main herd until they reach their first calving. This deserves trial on a more extensive scale. There is strong evidence now available to show that a solid immunity is produced which lasts throughout the period of the first pregnancy. There is also some evidence to suggest that the immunity persists for at least a second pregnancy. With few exceptions, animals vaccinated in this way have ceased to react to the agglutination test when they reach the calving age.

During recent years, strains of *Brucella abortus* have been modified in their virulence by serial transfer in the bodies of animals other than cattle. A vaccine (Wye Vaccine No. 2) has been used with strong immunising powers against abortion. A course of two or more injections at intervals of about six weeks is recommended. It is a vaccine of standard virulence and it has the distinct advantage that it does not render an otherwise non-infected animal a reactor to the agglutination test. A short time after inoculation, the vaccinated animals are not a potential source of infection to non-infected cattle. Protective inoculation with a vaccine of this type, followed after a convenient interval by blood testing and segregation of reactors, may enable eradication to be undertaken in herds in which the immediate adoption of such a policy is impracticable.

Discussion

Each method has proved, in suitable circumstances, to be of benefit to individual herd owners. In the absence of a national scheme of control none of the methods can be said to have succeeded in arresting the spread or materially reducing the incidence of disease throughout the country.

Where the necessary facilities are available, the ideal method of control is eradication. Several handicaps to its application upon the ordinary farm premises seriously mitigate against the chances of its succeeding as a nation-wide scheme. To succeed, the herd should be self-contained, there should be adequate separate accommodation for the healthy and the infected, and there should be sufficient pasturage to allow reactors to have separate grazing. Moreover, there is the ever-present danger, despite reasonable precautions, of re-introducing infection into the herd. The procedure is further complicated when concurrent attempts are made to eradicate other diseases from the herd.

On the other hand, living vaccines exert, for many reasons, an attractive appeal to the average stockowner who is suffering heavy losses in calves and milk through the existence of actual abortion in his herd. There is no doubt that in such cases the number of abortions can be appreciably reduced by the simple expedient of vaccination, without the irksome conditions necessary to an eradication scheme.

The use of virulent vaccines is also attended with certain drawbacks. In the past, the cultures used for the preparation of these vaccines have not been standardised with respect to their virulence for the bovine animal. The infection tends to be perpetuated upon the premises. Unless the vaccines are of a sufficiently low degree of virulence they cannot safely be employed upon heifers and cows which are already pregnant. At present living vaccines can only be recommended for use with non-pregnant animals. In addition, all new entrants to the herd, home-reared heifers, as well as purchased animals, must be vaccinated before service. Moreover, once the procedure has been adopted, the vaccinated adult animals may become continuous reactors to the agglutination test, making a subsequent change to an eradication scheme impossible.

The above disadvantages can be overcome in very large part by practising vaccination only on very young heifers, preferably between four and eight months of age. Cattle of this age possess a high degree of natural immunity and do not tend to remain carriers of the inoculated living *Brucella* organisms. By vaccinating animals during calfhood there is no necessity to delay service for two months when the animal becomes mature, as is the case if vaccination is delayed until maturity. When the young animals reach breeding age, the great majority do not react to the agglutination test.

The information so far published upon the use of vaccines, attenuated by animal passage in the laboratory and of standardised virulence, is encouraging. Vaccination of non-pregnant cows and heifers with living cultures so modified is attended with a minimum degree of risk, for it is claimed that after a short interval the vaccinated animals cease to harbour the inoculated organisms. Consequently, the employment of this kind of vaccine would not tend to perpetuate infection. The immunity produced has been shown to be adequate to protect against infections of natural origin. A problem yet to be resolved is whether or not the use of the vaccine is followed by reproductive disorders. The need for a course of injections rather than a single inoculation is a disadvantage.

Recommendations

Whilst the ideal to be aimed at is area, and eventually national, eradication, this is impracticable as an immediate measure. It is recognised that a number of herds exist from which contagious systematic blood testing.
abortion has been eradicated by methods of segregation, and elimination of reactors detected by

It is recommended that facilities for blood testing should be continued and extended for the purposes of eradication of contagious abortion from suitable herds.

The Committee, from the evidence presented to it, is of the opinion that control by vaccination is practicable. Vaccination has been applied

as a preventive measure for several years in badly infected herds and it has proved to be of considerable value. Many of the living vaccines employed have proved to be already attenuated in their virulence but they are not yet standardised.

It is recommended that vaccination should be encouraged in these herds and that all vaccines should be of standardised virulence.

Good results have been obtained from the inoculation of young heifers with living vaccines. The animals appear to derive a high and probably a lasting immunity. The majority cease to react to the agglutination test a short time after inoculation, 99 per cent. being found not to react when they have reached calving age. This indicates that they no longer harbour the causal organism of abortion, whether of vaccinal or natural origin, or excrete it in the milk. They are consequently not a source of danger to susceptible cows or to the human community.

It is recommended that when circumstances permit, the inoculation of living vaccines should be carried out in young heifers, preferably between the ages of four and eight months. These heifers should be kept apart from the main herd until they calve.

Recently, an attenuated living vaccine of standardised virulence which is believed to be free from undesirable qualities and to evoke a reasonable degree of immunity against field infection, has been developed by a British worker.

It is recommended that an extensive field trial should be made with this vaccine upon herds kept under adequately controlled conditions.

STERILITY IN DAIRY COWS

Introduction

The word *sterility* is usually employed loosely to cover widely differing conditions ranging from temporary to permanent infertility. It is not intended in this memorandum to deal with the subject in detail but simply to enumerate and outline the more important diseases and abnormalities responsible for sterility in dairy cattle and to recommend a scheme for control and treatment.

Classification and Brief Consideration of the Causes

The following classification of the causes of sterility is suggested :—

A. Sterility due to infection.
   (1) Specific.
   (2) Non-specific.
B. Sterility due to physiological derangement.
   (1) Irregularity of oestrus.
      (*i*) Anoestrus.
      (*ii*) Nymphomania.
   (2) Dietetic errors.
   (3) Infertility in bulls caused by abnormalities in the spermatozoa.
   (4) Impotence.

A. Sterility due to Infection

(1) Specific Infections

The specific infections associated with sterility are :—

(*i*) Infection with *Br. abortus*, the cause of contagious bovine abortion. Whether this organism induces abortion or not it may so alter the uterine mucosa as to facilitate invasion by secondary non-specific organisms resulting in catarrhal endometritis which is frequently associated with some degree of cervicitis and vaginitis. Endometritis is generally accepted as being the commonest cause of infertility in the dairy cow and it is probable that infection with *Br. abortus* and its sequelae account for a large proportion of the cases of sterility in dairy cows in this country.

(*ii*) Infection with *Trichomonas foetus*. This protozoan is associated with a contagious disease of the genital organs characterised by a periodic vaginal discharge which is sometimes followed by abortion (usually within the first 10 to 16 weeks of pregnancy) and sometimes by inhibition of oestrus for long periods, this latter symptom being associated with pyometra. So far as is known, the infection is spread only by sexual intercourse, the organism being present in the preputial discharges of the bull. It is doubtful if a bull, once infected, ever makes a complete recovery. Trichomonas infection should be suspected in any herd in which infertility has gradually increased and in which early abortions have occurred. In recent years, the infection has had a gradually increasing incidence in this country : it is likely to become widespread in a herd if it passes unrecognised and to be responsible for heavy loss of both calves and milk. The disease is amenable to rigorous herd control and skilled treatment.

(*iii*) Infection with *Corynebacteria*. This group of organisms is responsible for a diseased condition of the genital organs closely resembling Trichomonas infection. It is associated with early abortion (usually between the third and fifth month). The discharge is thick and yellow in colour and has a characteristic foetid odour. Recently infected cows respond readily to treatment but in long standing cases this is less successful. Rigorous herd control is essential. The incidence of this disease appears to be increasing.

(*iv*) *Vaginitis*

(*a*) *Contagious vesicular vaginitis* (" bull burn ").—This condition is believed to be caused by a filterable virus which produces an easily recognisable acute inflammation of the vagina of the cow. In affected bulls inflammation of the penis and the preputial lining is found. The condition responds to treatment. Its importance lies in the fact that over a comparatively short period it disorganises breeding in the herd.

(*b*) *Contagious granular vaginitis*.—This disease has a regional distribution and where it occurs in maiden heifers may be associated with a high degree of sterility (60 to 80 per cent.). It is amenable to

treatment. A temporary physiological condition bearing some resemblance to it is very common, but is of no particular significance so far as sterility is concerned.

(2) Non-Specific Infection

Non-specific infection of the genital organs may occur without known cause or it may follow injury incurred during difficult calving, unskilled attempts to assist calving, the retention of foetal membranes or douching with unsuitable solutions. The uterus is involved resulting in a catarrhal endometritis similar to that produced as a sequel to the specific infections already mentioned. This metritis varies in intensity but in the majority of cases remains unsuspected and can generally only be diagnosed by clinical examination by a skilled person. In this condition, there is repeated return to service while the animal often shows no clinical manifestation other than some degree of vaginitis or cervicitis. In more advanced cases abnormal discharge from the vulva may occasionally occur.

In some cases suppurative inflammation occurs and pyometra may follow, characterised by a periodic whitish discharge from which symptom is derived its common name of " Whites." Sometimes oestrus is absent, the cervix is closed and the discharge is not voided ; skilled examination is necessary to diagnose the condition.

In neglected cases of endometritis ascending infection may result in salpingitis (inflammation of oviduct), a condition which rarely yields to treatment.

B. Sterility due to Physiological Derangement

Physiological derangement accounts for not more than 10 per cent. of all causes of sterility in average herds, but in certain intensively managed farms the relative incidence is higher. It is well known that healthy cows conceive more readily to service during the first or second oestrus after calving than when several oestral periods are allowed to pass.

(1) Irregularity of the Oestral Cycle.—(*i*) *Anoestrus.*—Absence of oestrus is probably responsible for most cases of infertility due to physiological derangement. It frequently occurs in mature animals which have calved, some of which may have come into oestrus once after calving. If such animals are left untreated, oestrus may not recur for a period of months. The condition responds readily to treatment by ovarian manipulation. Anoestrus is also met with in heifers, particularly those kept in poor condition during the winter. Spontaneous recovery usually follows the provision of better food or better grazing in the springtime. Anoestrus may be symptomatic of infection with *Trichomonas foetus* or corynebacteria, of pyometra due to other causes, or of the presence of a mummified foetus.

(*ii*) *Nymphomania* is a condition in which oestrus recurs at frequent irregular intervals when considerable excitement is exhibited. True nymphomania is not amenable to treatment.

(2) Dietetic Errors may be a contributory cause of sterility, usually characterised by subnormal or irregular ovarian function. The results of preliminary work suggest that the elements which may be involved include calcium, phosphorus, manganese, iron, copper, cobalt and iodine. Vitamin deficiencies, particularly of A and E, may be associated with sterility towards the end of a long winter. This is especially so in cows which have been continually housed and fed mainly or wholly upon hay of inferior quality and concentrates of the compound by-product type, receiving only a minimum supply of roots or green stuff. In such animals the signs of heat are materially reduced and often unobservable and of very short duration (silent heat).

(3) Infertility in Bulls Due to Abnormalities of Spermatozoa.—Infertility, temporary or permanent, may occur due to abnormality in the number, viability or morphology of the spermatozoa. In the absence of service records, considerable time may be lost before the bull which has become infertile from this cause is detected, and the infertility may be attributed to the cows. Diagnosis can be confirmed by microscopic and other examinations of the semen. The condition may be associated with specific infection in the bull, such as with *Br. abortus.*

(4) Impotence in the bull may be partial or complete, temporary or permanent. It is met with in so-called " slow " animals, the breeding records of which are usually unsatisfactory. It also exists in bulls which have been used excessively when very young and in older bulls kept in fat condition and under-exercised. It may result from physical defects such as feet injuries, paralysis of the retractor penis muscle, and from such conditions as old age, etc. Recovery may, upon occasion, follow treatment and improved management.

In heifers impotence is met with in freemartins (heifer of twins of opposite sex) in which the organs are often vestigial, and in other anatomical abnormalities, *e.g.*, " white heifer " disease. Skilled examination can detect these conditions and treatment can sometimes be applied successfully to some of them.

Control and Treatment of Sterility

In some North European countries, the authorities have been fully alive to the commanding importance of regular clinical examination of all cows and treatment of those which fall below normal breeding standards. Excellent results have followed this practice. In this country, however, only a small proportion of progressive owners have taken advantage of the veterinary advice and services available.

The elimination of contagious abortion, as has been shown in the U.S.A. and Canada, can reduce the incidence of sterility by as much as 75 to 80 per cent.

Good herd management is an important factor in the control of sterility. In each herd the following records should be kept as a routine : dates of oestrus ; dates of service ; dates of parturition ; and service

records of bulls. Accurate records of dates of service are of great assistance in the early diagnosis of pregnancy. Records of services and parturition dates enable premature calves to be detected and appropriate steps to be taken. The record of the bull is useful in detecting loss of fertility at the earliest possible moment. All these records, provided they are accurate, are an important contribution to diagnosis where no gross clinical lesions are observed. Any abnormality in the length of the oestral cycle should be noted and any cow exhibiting such abnormality should be withheld from service. Similarly, any cow showing abnormal vaginal discharge, whether at oestrus or between oestral periods, should be withheld from service. With either of these manifestations it is practically certain that the cow will not conceive, and repeated service often tends to accentuate the abnormality.

Dietetic errors likely to influence sterility can be in some cases prevented by the provision of mineral or other supplements. " Silent heat " can usually be overcome by ovarian manipulation.

Absence of oestrus is by no means an infallible indication of pregnancy : on the other hand, the fact that oestrus is occurring cannot be taken as conclusive evidence that a cow is not pregnant.

Remedial measures vary with the condition present and consist of intra-uterine injections through the contracted cervix, manipulation of the genital organs, use of suitable hormones, etc. Their safe administration requires a considerable degree of skill and professional knowledge.

It is essential to arrange for regular periodic examination of cows and heifers to permit the carrying out of prompt treatment when necessary. The infertile period is made as short as possible, thus avoiding the losses due to long dry periods, maintenance while the animal is unproductive and reduced annual milk yields. Ability to diagnose early pregnancy is essential. The examination skilfully carried out cannot adversely affect a pregnant animal.

Veterinary surgeons actively engaged in the treatment of bovine sterility are of the opinion that 80 per cent. of affected cows are curable, provided early and appropriate treatment is given. During recent years, considerable progress has been made in diagnosis and treatment and a number of veterinary surgeons are exercising excellent control of sterility in herds belonging to progressive owners. It requires, however, the full co-operation of the owner to secure the maximum benefits of measures instituted to minimise the enormous wastage due to this condition.

Recommendations

The Committee is profoundly impressed with the enormous loss in milk and calf production caused by temporary infertility and by sterility. From the evidence before it, the Committee is satisfied that 80 per cent. of this loss is preventable.

It desires to emphasise that the accurate diagnosis and proper treatment of sterility demand a high degree of professional skill. To achieve the maximum results in the control of this disease, prompt and appropriate treatment is essential, and the veterinary practitioner must be brought into earlier and closer contact with his cases than is customary or is in fact regarded as economically practicable under ordinary average conditions.

It is recommended that the stockowner should keep accurate herd records and that the veterinary practitioner, to whom these records should be available, should carry out regular periodic examinations of every breeding animal in the herd, and where necessary, apply treatment.

JOHNE'S DISEASE

Introduction.

Johne's disease is caused by *M. paratuberculosis* (Johne's bacillus) which is found in the intestine and in some cases in lymphatic glands of affected cattle. Specific changes are found in the intestinal mucous membrane and, in clinically affected cases, intermittent diarrhoea occurs together with rapid and progressive emaciation. All breeds of cattle are susceptible. The disease is not notifiable and no accurate information is available concerning its incidence. It is known, however, to be widespread and in some counties, especially Sussex, Cornwall and Hereford, the incidence is especially high.

Affected animals excrete the causal organisms in the faeces and thus pastures, etc., become contaminated. Ponds and other watering places soiled with faeces from infected cattle are a common source of infection.

Cattle may be infected for considerable periods before clinical symptoms become evident, if at all, and because such animals may excrete the causal organism they constitute a danger to susceptible cattle. Calves and young bovines are highly susceptible to infection.

There is no satisfactory method of curing affected cattle.

Methods of Control

The most satisfactory method of control is to diagnose affected cattle in the early stages of infection and to remove them from contact with susceptible animals. Diagnosis can be effected by the use of the product—johnin. It is injected intradermally, if necessary on two occasions at an interval of 48 hours; in infected animals a diagnostic swelling develops at the site of injection. It is important that the johnin should be specific and of a sufficient degree of potency to detect the maximum number of infected cattle. The test may not detect 100 per cent. of infected animals but the majority of early cases react positively before they become clinically affected. The use of johnin, particularly in young stock and beef-producing herds, together with the adoption of good farm management and hygiene, is of much value in controlling the disease.

Good farm management is itself productive of good results. Clinically affected animals must be removed from the herd and as no satisfactory cure is known, they should be slaughtered before they become emaciated. Further, as adult cattle may be infected without showing clinical symptoms and may be excreting the causal organism, and as calves are highly susceptible to infection, the rearing of young stock apart from adult cattle is of importance and should be encouraged where practicable. The railing off of contaminated ponds and watering places is of much value. It has not yet been definitely proved how long pastures will remain contaminated but the results of experiments indicate that within a year infection has disappeared though, following hot weather, the period may be considerably shortened.

Recommendations

It is recommended that, in suitable herds, testing with johnin of known specificity and proved potency should be practised; positively reacting cattle should be segregated: clinically affected animals should be slaughtered. Young stock should be reared apart from adult cattle, and separate pastures provided. Contaminated pastures should not be grazed by cattle for at least twelve months.

It must be stressed that it is not possible to lay down rigid rules for the control of Johne's disease which are equally applicable to all affected herds.

ANTISEPTICS IN WAR-TIME SURGERY

"The winter session of the Pharmaceutical Society's evening meetings was inaugurated on November 14th by Prof. A. Fleming, professor of bacteriology in the University of London, who delivered a lecture on 'Antiseptics in War-Time Surgery.' He said that in the present war surgeons should be able to undertake their work more efficiently than they were in 1914 in view of the chemical antiseptics which are now available but were then lacking. Thus the present situation in respect of the treatment of war wounds is infinitely more satisfactory than it was in the war of 1914-18. The antiseptics in use in 1914 have since been shown to be of little value for use in war-time surgery. Carbolic acid, for example, is effective when used otherwise than in connection with the human body, but inside the body its lack of value is shown by the diminution of its efficiency with increasing concentrations, this being due to its action in destroying the leucocytes. Consequently carbolic acid is not of any great use as an antiseptic in the treatment of wounds.

"Prof. Fleming also pointed out that the dyes are of little value as they are absorbed by the cotton wool used in dressing the wounds. Regarding antiseptics belonging to the sulphonamide group, he gave a warning against placing too much faith in them. They are not, he said, general antiseptics but are specific to certain bacteria; further, the action of these antiseptics is neutralised by chemicals, pus and dead bacteria and they are, therefore, of little value in the treatment of seriously septic wounds, in which pus and bacteria were inevitably present. The virtue of this new group of antiseptics is in their high solubility; they dissolve to form high concentrations in the wound. The sulphonamides are of great value in the treatment of fresh wounds where pus and bacteria are absent, since they inhibit the growth of certain important bacteria, and there is nothing in the fresh wound to inhibit the action of the sulphonamide.—*Nature*, November 23rd.

THE VETERINARY RECORD

January 4th, 1941.

ANIMAL HEALTH

READERS of the first section of the Survey Committee's Report will begin to realise the magnitude of the task which has been undertaken. Problems of immediate urgency to dairy farming are the subject of the present Report, reviving memories of the Gowland-Hopkins Report; but it is intended to survey the whole field of veterinary preventive medicine and record the latest facts and opinions, upon which may be based a sound and comprehensive policy of animal health, to the nation's profit. The stringency of war demands avoidance of waste, but the same factor will certainly preclude deviations except such as are calculated to show quick returns. The Committee is, therefore, wisely formulating both a short-term policy for immediate application and a correlated long-term policy in preparation for time of peace.

An important feature of the survey is that it is made primarily from the angle of animal health *per se*. That is not to say that the significance of disease communicable to man is under-estimated, but it is no longer the principal stimulant to action. The survey is essentially veterinary in origin and outlook, as will be the practical operation of such recommendations as are accepted, and already the Committee can acknowledge with gratitude help received from many diverse interests within the profession, notably from official quarters. But the dimensions of the subject under enquiry necessitate the invitation of views from scientists who are not within our ranks, an association to which we look forward with eager anticipation. Translation of findings into practice will present problems upon the solution of which every member of the profession will be invited to co-operate. A preliminary plan has been drafted and will shortly be issued as a basis for general discussion.

May all the knowledge and wisdom at our command be brought to bear upon this great task which is but begun. May all ranks and sections, branches and interests, resolve to work in harmony, to the end that we may make a real contribution in this hour of the nation's need—and after.

It is better to travel hopefully than to arrive. It is better to travel in company than alone.

The Minister of Food is concerned that cases are still brought to its notice of the grading of cattle, sheep and calves by irregularly constituted Certifying Authorities. The Ministry wishes to make it clear that the Livestock (Sales) Order requires that all animals sold for slaughter for human consumption shall be graded by a Certifying Authority appointed by, or under the authority of, the Minister. It is contrary to the terms of the Order, therefore, for any person to act as a grader of livestock, unless he has been formerly appointed by the Ministry as a member or deputy-member of the Certifying Authority, save in exceptional cases covered by the Ministry's general authority granting, under certain conditions, powers of co-option.

CLINICAL COMMUNICATION

Coliform Mastitis in a Sow

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A pedigree Wessex sow which had successfully reared a previous litter, farrowed eight apparently healthy piglets. Six hours after farrowing the sow became uneasy. The piglets ceased to suckle and all died within 24 hours of birth. The sow refused all food and evidence of mastitis became apparent. She was examined about 48 hours after farrowing when she was found lying extended on her side. Breathing was laboured. It was with difficulty that she was made to rise and had to be supported when on her feet.

The whole mammary gland on both sides was swollen, hard, hot and painful. There was no discoloration. No fluid or other material could be expressed from any of the teats.

On the fourth day the sow died and a piece of the affected udder was received for bacteriological examination.

There was isolated in pure culture a coliform organism with the following characters: motile; non-capsulated; fermented, with gas production, lactose, glucose, maltose, mannite, arabinose; no fermentation, after seven days' incubation, of sucrose, starch, dulcite, salicin, inulin; produced acid and clot in litmus milk; did not liquefy gelatine; produced indol in 24 hours; positive methyl red reaction; negative Voges-Proskauer reaction; intraperitoneal injection of 0·2 c.c. of an eight-hour broth culture killed a mouse within twelve hours.

There are few records in the literature of the results of examination of material from mastitis in sows. Adam and Pinguet (1938) examined ten cases in eight of which pure cultures of coliform bacilli were recovered and in one, a coliform organism together with streptococci and staphylococci. The characters of the coliform organism from these cases correspond with those described above. These authors express the opinion that, in all probability, mastitis in the sow arises from a blood infection with coliform bacteria derived from the intestine and that, in addition, there occurs a similar infection of the foetuses *in utero*.

Reference

Adam and Pinguet (1938). *Rec. Méd. Vét.* **114.** 36.

ABSTRACTS

[PULMONARY TUBERCULOSIS IN CATTLE. Medlar, E. M. (1940.) *Amer. Rev. Tuberc.* **41.** 283.]

In order to obtain data on the distribution of the lesions in pulmonary tuberculosis of cattle, the author examined 520 pairs of tuberculous lungs containing 2,005 lesions. Regarding the distribution of single lung lesions it was found that the right lung was more frequently involved than the left, but the difference was not apparent when considered in relation to the greater volume of the right lung. The haphazard distribution of lesions in the lung parenchyma and the similarity between the distribution of solitary and multiple foci strongly suggests that the infection is airborne. In confirmation of the findings of Nieberle and Smith the most common area for the location of lesions was the dorsal aspect with a considerable concentration towards the caudal end of the lung. The lesions, except in advanced cases, were preponderantly superficial and rarely found deep in the lung parenchyma. Actually the type of lesions showed a still greater discrepancy between certain portions of the lung parenchyma. A comparison between the dorso-caudal and cephalo-ventral area showed the following differences: for all the lesions the ratio was 5 to 1, for soft caseous 15 to 1, for cavitating about 8 to 1 and for calcified approximately 1 to 10. From this comparison it is evident that after tubercle bacilli have initiated a parenchymatous lesion the course of the focus is greatly influenced by the site of its location.

The author, in explaining the unequal distribution of lesions in the bovine lung, suggests that factors other than directness of air distribution must be responsible for the involvement of the dorso-caudal area. Furthermore, the greater frequency of lesions in the dorso-cephalic part of the human lung cannot be explained by the sole influence of respiratory action.

Medlar suggests that the dominance of progressive tuberculosis in the more elevated portions of lung tissue in both species can best be explained on the hypothesis that posture influences the condition within the lung parenchyma.

S. J. E.

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[*MUSCA DOMESTICA* A VECTOR OF BOVINE MASTITIS. [PRELIMINARY REPORT.] Sanders, D. A. (1940.) *J. Amer. vet. med. Ass.* **97.** 120.]

Emphasis is laid on the habits of the common house fly (*Musca domestica*) and its indiscriminate feeding habits. Observation showed that flies feed on the drops of milk at the external teat orifice and also on infective material if such is about the byre. Transmission experiments both by direct application of the flies to the teats and by infected flies present in the byre, were successful in each of several cows exposed to infection (number not stated).

P. S. W.

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[VITAMIN B_6 DEFICIENCY IN CHICKS. Jukes, T. H. (1939.) *Proc. Soc. Exp. Med. Biol.* **42.** 180-182. (1 fig., 8 refs.).]

A successful attempt to produce vitamin B_6 deficiency in chicks is described. Symptoms of disease appeared in birds maintained on a diet of glucose, sardine meal, casein, lard, salt mixture, fish oil, yeast extract, nicotinic acid, riboflavin, thiamin and hexane extract of alfalfa meal. Symptoms included slowing of growth, anorexia, spasmodic convulsions, and death. The disease was prevented by the addition of synthetic vitamin B_6 to the diet.

D. D. O.

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[EXPERIMENTAL INDUCTION OF A DISORDER RESEMBLING TOXAEMIA OF PREGNANCY IN THE RABBIT. Greene, H. S. N. (1939.) *Proc. Soc. Exp. Med. Biol.* **40.** 606-608. (2 refs.).]

Investigation of pregnancy toxaemia of rabbits indicated that it was endogenous in origin, and

analogous to the pregnancy toxaemias of other mammals. Attempts were made to induce the disorder in experimental animals with various pituitary preparations. Successful results attended the subcutaneous or intraperitoneal injection of 5 c.c. of aqueous extract of fresh beef glands, 500 rat units of Antuitrin S, or 1 c.c. of Antuitrin. The injections must be made on the 27th day of pregnancy, and repeated on the 29th day to produce a disease closely analogous to the spontaneous condition. Death occurs in about 40 per cent. of injected animals. On autopsy outstanding lesions are present in the liver, kidneys and adrenals. The liver shows widespread acute fatty degeneration and areas of necrosis. The kidneys are fatty and occasionally bilateral cortical necrosis can be demonstrated. Fatty degeneration occurs in all parts of the adrenals. During the experiments 62 rabbits were injected. Disease resulted in over 90 per cent. of these animals.

D. D. O.

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[THE PROTHROMBIN CONVERSION RATE IN VARIOUS SPECIES. Warner, E. D., Brinkhous, K. M., and Smith, H. P. (1939.) *Proc. Soc. Exp. Med. Biol.* **40.** 197-200. (1 table, 5 refs.).]

The rate at which thrombin forms in freshly drawn blood depends upon the amounts of prothrombin and thromboplastin present. In addition to these factors there is an element of species specificity. The conversion of prothrombin to thrombin is much more rapid in the dog, cat and rabbit than in man or guinea-pig. The difference in rate can be attributed only to a species factor, since comparable levels of prothrombin and thromboplastin can be reached in all species.

D. D. O.

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[SWAYBACK STUDIES IN NORTH DERBYSHIRE. II.—THE RELATIONSHIP OF THE STORAGE OF COPPER AND LEAD IN THE BODY TISSUES TO THE CAUSATION OF SWAYBACK. Shearer, G. D., Innes, J. R. M., and McDougall, E. I. (1940.) *Vet. J.* **96.** 309-322.]

The experimental results show that the addition of small amounts of copper to the diet of ewes in Derbyshire hastens the physiological rise of blood copper during pregnancy. This appears to coincide with the prevention of swayback in their lambs but there is no constant relationship between the ultimate level of blood copper in the ewe and the occurrence of the disease in the lamb. The sheep used were ingesting relatively large amounts of lead, as seen from the analysis of the pastures, but this metal did not appear to be directly concerned in the production of the disease. There is every indication that the occurrence of a haematopoietic disturbance in the ewe has no connection with swayback in the lamb.

W. M. H.

The Irish Livestock Traders' and Exporters' Association, who have been investigating complaints that cattle arriving at the ports often show injuries, caused, it is believed, by lack of accommodation at fairs, have decided to ask the Minister for Local Government to take steps to provide fair greens in country towns.

ROYAL COLLEGE OF VETERINARY SURGEONS

Membership Examinations (December, 1940)

List of Successful Candidates

(*Continued from page* 898.)

Glasgow (*Continued*)

Fourth Year:

Aupret, D.
Bannister, Miss J. D.
Black, Wm.
Blair, J. W.
Brown, R. A.
Edwards, J. R.
Forbes, D. A.
Grant, P. N. H.
Howatson, John
Lambie, Gavin
Lauder, I. M.
McCance, C. M.
Mackenzie, G. A.
Mackinnon, I. J.
Maclauchan, D.
Meikle, H. A. G.
Muir, R.
Paterson, A. B.
Pomphrey, A. M.
Shaw, D. B.
Steele, James
Stewart, Thos.
Young, J.

Final Year:

Aitken, A. J.
Dayus, E. H.
Hay, T.
Holmes, Ed.
Logue, F. W.
Mackinlay, Miss C. M.
Melville, A. V.
Miller, Wm.
Moore, C. C. S.
Monie, R. F.
Pearson, D. J.
Pettigrew, G. M.
Rose, W. K.
Scott, Alex.
Scott, W. A. C.
Tulloch, J. A. R.

Dublin

First Year:

Cooper, R. G. (C)
Lyttle, C. N.
McAulfield, R.
McCarthy, J.
McMaster, J.
McHale, C. J.
Molloy, P. F.
Moorhead, P. J.
O'Byrne, T. F.
•O'Donnell, B. L.
•O'Moore, L.
Sheahan, Miss M. (B)

•Denotes second class honours.
(C) Denotes credit in Chemistry.
(B) Denotes credit in Biology.

Second Year:

•Buckley, R.
Craig, S. A. (H)
Cranley, J.
Fitzgerald, Miss P.
Kavanagh, J. F.
Kelly, B. O.
McCann, P. G.
McNellis, N. J. (H)
Owens, C. P.
•Paul, C. B.
Power, P. N.
Quealy, A.
Tufts, F. A.

•Denotes second class honours.
(H) Denotes credit in Histology.

Third Year:

Burns, N. M.
Carroll, G. A. (A)
Counihan, E. J.
Jones, A. R. (P) (A)
Larkin, P.
Marshall, D. R. (A)
Morgan, F. J.
Parker, I. V. G. (A)
Pollock, A.
Smith, P. J.
Thornberry, H.
Wallace, J. G.

(P) Denotes credit in Pharmacology.
(A) Denotes credit in Anatomy.

Fourth Year:

Brown, C. C.
Burns, T. F.
Clarke, J. B. (Paras)
Farrelly, C. (Paras)
Fletcher, W. E.
Hannigan, D. V.
Hunter, W. M. D. (Paras)
Kerr, K.
Kinney, J. A.
Lappin, A. P.
Lynch, T. A.
McLaughlin, J.
McVeigh, D.
O'Reilly, H. L.
Singh, B. S. (Path)

(Paras) Denotes credit in Parasitology.
(Path) Denotes credit in Pathology.

XUM

FINAL EXAMINATION:

Hewer, J. D. R.
McCall, W.
McEvoy, B.
O'Dwyer, M. J.
Markham, T. F.
Meikle, J. C. (Glasgow Student)
Sheehan, Miss R.
Sloan, W.

(To be concluded.)

IN PARLIAMENT

The following are among the questions and answers recorded in the House of Commons recently:—

ANIMAL FEEDING-STUFFS RATIONING SCHEME: ADMINISTRATIVE COSTS

Mr. LIDDALL asked the Minister of Agriculture whether he will give an estimate of the total administrative costs of the proposed rationing scheme for animal feeding-stuffs together with the approximate number of persons likely to be employed under the scheme; and whether, in view of the small amount of feeding-stuffs likely to be available, he will consider improving existing methods of distribution so that the employment of many people on unproductive war work will be avoided?

Mr. T. WILLIAMS: It is estimated that in a full normal year about 800 persons will be employed by the Departments of Agriculture in Great Britain, either directly or through the County War Agricultural Executive Committees, in connection with the scheme for rationing animal feeding-stuffs, and that the total administrative costs will amount to about £175,000. My right hon. Friend is satisfied that by no other method would it be possible to secure the improvement in distribution, and the observance of priorities for the various classes of livestock, which the Government considers necessary.

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DOCTORS (PROTECTION OF PRACTICES)

Mr. GROVES asked the Minister of Health whether he will consider formulating a scheme for the protection of panel practices of medical practitioners who have been injured or whose houses have been so damaged by enemy action that they are unable to continue for a time in practice by reason of their state of health or of no alternative accommodation within a reasonable distance being readily available?

Mr. M. MACDONALD: I understand that insurance medical practitioners who have suffered hardships by reason of air-raids are receiving every possible assistance from the insurance committees and their professional colleagues. Where approval on my part would be necessary to an extension of the Protection of Practices Scheme in operation in any area, to cover practices which are in temporary abeyance as the result of air raids, I should be prepared to consider the matter on application from the insurance committee.

At the ninetieth annual meeting of the Glasgow Agricultural Society Professor Wm. Robb, F.R.C.V.S., and Professor John R. McCall, M.R.C.V.S., were re-elected veterinary surgeons to the society.

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Foot-and-mouth disease has broken out among cattle at Littlehempston, near Totnes; Overton, near Basingstoke; Shalbourne, near Marlborough; and Erdington, near Westbury, Wilts.

NOTES AND NEWS

The Editor will be glad to receive items of professional interest for inclusion in these columns.

National A.R.P. for Animals Committee

EMERGENCY PETROL RATIONS

Veterinary surgeons and other N.A.R.P.A.C. workers are asked to return immediately to the Veterinary Officer who issued them (and who will forward them to the Petrol Liaison Officer) their sealed envelopes containing emergency petrol coupons. Fresh envelopes will then be issued covering the whole of the ensuing year. Those who have had occasion to open their envelopes are asked to return their unused coupons to their Veterinary Officers.

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PERSONAL

New Year Honours

In the list of New Year Honours conferred by the King and issued on Wednesday last, we are glad to note that the Order of the British Empire (Civil Division) has been conferred upon Mr. John Reid Haddow, M.R.C.V.S., D.V.S.M., of the Indian Veterinary Service. Mr. Haddow is Veterinary Research Officer-in-charge of Serology, Izatnagar.

Members of the profession also welcome very heartily announcement of the award of the K.B.E. to Mr. Donald Edward Vandepeer, Second Secretary, Ministry of Agriculture and Fisheries. Mr. Vandepeer officiated as co-equal with the Chief Veterinary Officer, Sir John Kelland, at the head of the Animal Health Division of the Ministry of Agriculture and Fisheries, and representatives of the Association had many and most amicable dealings with him at the time when the recommendations of Part IV of the Agriculture Act, 1937, were being implemented.

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Mr. Martin J. Byrne, M.R.C.V.S.

Mr. Martin J. Byrne, who, as we announced in earlier issues, has been appointed as the successor to Professor J. J. O'Connor in the Chair of Surgery at the Veterinary College, Dublin, joined the College staff in 1934, when he was appointed lecturer in Parasitology. In the following year he became assistant to Professor O'Connor, and it is the more fitting that he should succeed him. The new Professor is a Tipperary man and, himself an accomplished horseman, is well known in hunting and racing circles.

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Births.—HARBOUR.—On December 8th, 1940, to Mary, wife of H. E. Harbour, Bangor—a son.

INGRAM.—On December 19th, 1940, at Cotswold, Oxted, Surrey, to Hazel, wife of J. McConnachie Ingram—a daughter.

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Marriages.—BROOKSBY—WEIR.—At Balshagray Parish Church, Glasgow, on December 18th, 1940, by the Rev. G. Kerr Mackay, T.D., M.A., John Burns Brooksby, B.Sc. (VET. SC.), M.R.C.V.S., Pirbright, Surrey, only son of Mr. and Mrs. Geo. B. Brooksby, Glasgow, to Muriel Boyd Alexander Weir, M.R.C.V.S., only daughter of Mr. and Mrs. John Weir, Glasgow and Millport.

FRANCIS—HUNT.—On December 14th, 1940, at St. Mary's, Horsell, Mr. John Francis, The Foot-and-Mouth Disease Research Station, Pirbright, to Sally Anna, daughter of the late Wilfred Hunt and Mrs. Hunt, Hillfoot, Horsell.

R.C.V.S. OBITUARY

McMurrich, William Stewart, 32, Sinclair Street, Street, Helensburgh, Dumbarton. Graduated Glasgow, December 23rd, 1890. Died December 18th, 1940; aged 75 years.

Mr. William S. McMurrich, M.R.C.V.S.

Mr. W. S. McMurrich, whose death we record above with much regret, and who passed away at his residence, Lindisfarm, Helensburgh, built up a large practice throughout the western district of Dumbartonshire, where he rendered valuable service to the agricultural community for 50 years. Mr. McMurrich held appointments in the county as well as in Helensburgh.

He was the proprietor of Messrs. Waldie & Co., motor hirers and contractors, and for many years kept a stable for hackneys and hunters, and extensive dog kennels.

He was a member of St. Columba Church, of which his grandfather was a founder and a member of the first Kirk Session.

Several years ago he and a brother presented to the Helensburgh Town Council the fly-wheel of the *Comet*, also an old anvil which was used by their grandfather, who was associated with Henry Bell in the construction of the *Comet* before she was launched.

Mr. McMurrich is survived by his widow.

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The Late Mr. William Lothian, M.R.C.V.S.

An Appreciation

With the death of William Lothian, recorded in your issue of December 21st, there has gone from us one of the finest examples of the old school of veterinary practitioners.

His grandfather was a Berwickshire farrier and his father sat at the knees of William Dick, from whose school he graduated in 1844. But he who was so widely known as "Lothian of Duns" was a pupil of William Williams and was imbued—as so many of his fellow students have been imbued—with the spirit and enthusiasm of that Master.

Lothian commenced practice in Duns as successor to his father in 1884 and when he retired in 1939 he had completed 55 years of devoted professional service to his community.

Lothian regarded his membership of the veterinary profession primarily as a privilege which permitted him to alleviate animal suffering and to serve agriculture.

He sought no personal aggrandisement; indeed, in his avoidance of all recognition of his services and in his desire for self-effacement he carried the virtue of modesty almost to a fault. Yet his repute as a clinician was held highly by a wide circle of confrères and clients and by none more highly than the many students (with whom must be numbered the writer) who were his accepted pupils.

Now to us he must remain but a memory, but it is that of a splendid veterinarian and a great gentleman.

J. R. G.

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NEW CHIEF MEDICAL OFFICER

Sir Arthur MacNalty, K.C.B., Chief Medical Officer of the Ministry of Health and of the Board of Education, has retired on reaching the age limit. The Minister of Health and the President of the Board of Education have respectively appointed Sir Wilson Jameson, M.D., F.R.C.P., D.P.H., to be Chief Medical Officer of the Ministry and the Board. Sir Wilson Jameson is relinquishing the post of Medical Adviser to the Secretary of State for the Colonies; he is also relinquishing the post of Dean of the London School of Hygiene and Tropical Medicine and Professor of Public Health of the University of London.

Sir George Chrystal, K.C.B., Secretary of the Ministry of Health, is retiring on reaching the age limit. The Minister of Health has appointed Sir John Maude, K.B.E., C.B., Deputy Secretary of the Ministry, to be Secretary, and Mr. A. N. Rucker, C.B.E., to be Deputy Secretary.

FUND FOR RED CROSS AND VETERINARY CHARITIES

In our last issue we published the latest list of donations to the fund sponsored by Mr. E. G. White, representing the proceeds of the sale of medals surrendered by veterinarians and students to augment, jointly, veterinary charitable funds and the Duke of Gloucester's Red Cross and St. John's Fund. In connection with the donation sent, as a consequence, to the latter, Mr. White has received the following letter of appreciative acknowledgment from the Chairman of the Executive Committee, Lord Iliffe.

H.R.H. The Duke of Gloucester's Red Cross and St. John Fund

St. James's Palace,
S.W.1.
December 19th, 1940.

Dear Sir,

I am desired by the Duke of Gloucester to thank you sincerely for the donation of £18 10s. 0d. which you have kindly sent for the Red Cross and St. John Fund as a result of your appeal for medals to veterinary surgeons and students.

His Royal Highness is most grateful to all who have surrendered their medals, and very much appreciates your valuable work in collecting them for the benefit of the sick and wounded and prisoners of war.

With best wishes for any further efforts you may be able to make for the Fund.

Yours very truly,
Iliffe.

E. G. White, Esq., M.R.C.V.S., B.Sc.,
Research Institute in Animal Pathology,
Royal Veterinary College,
"The Beeches,"
Streatley, Berks.

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TUBERCULOSIS (ATTESTED HERDS) SCHEME, 1938

Under Section 4 (1) of the Agriculture (Miscellaneous War Provisions) (No. 2) Act, 1940, the Ministry of Agriculture and Fisheries has made a scheme extending the period of operation of the Tuberculosis (Attested Herds) Scheme, 1938, beyond January 31st, 1941.

The new scheme provides that the present rates of milk bonus and capitation bonus shall be continued until September, 1943, and that where bonus has been paid in respect of a herd for a period of three years either on a capitation or on a milk basis no further payment of bonus shall be made.

It should be noted that notwithstanding the fact that bonus payments in respect of a herd cease at the end of three years, the herd will remain on the Register of Attested Herds providing the owner continues to observe the conditions and rules of the scheme.

Tuberculin tests in accordance with the provisions of the scheme will continue to be carried out free of charge. The cessation of the bonus payments does not effect the payment by the Milk Marketing Boards of quality premiums to which owners would normally be entitled.

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"THE TROJAN HORSE IN AMERICA"

"The Londoner's Diary" of a recent issue of the *Evening Standard* embodied the following intriguing paragraph: "The reports of German and Italian spy activities in the United States, published under the title 'The Trojan Horse in America,' by Martin Dies, is a best seller among Americans. Not only diplomats, politicians and students of politics have shown interest in the report. According to the publishers, who print photostat copies of letters received, the Dean of a Massachusetts University applied for a complimentary copy, feeling sure that 'the book would have merits for our students enrolled in the School of Veterinary Medicine.' Several other veterinary schools and colleges asked for copies for the same reason."

XUM

CORRESPONDENCE

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

The views expressed in letters addressed to the Editor represent the personal view of the writer only and must not be taken as expressing the opinion or having received the approval of the N.V.M.A.

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V.V.B.F. CHRISTMAS GIFT APPEAL

To the Editor of the Veterinary Record

Sir,—Will you please allow me, through the *Veterinary Record*, to thank the many veterinary surgeons (including their wives) who have responded to my appeal for Christmas gifts.

The sums received in time to be distributed before Christmas, with an amount carried forward from last year, enabled us to send Christmas gifts of £1, £2 and, in one case where there were several children, £3, to 29 recipients, the total distributed being £41 2s. 6d. Sums since received amount to £13 5s. 0d. and this will be carried forward as the neucleus for next year's gifts.

Already letters of warm appreciation have been received from the widows and orphans who have benefited by these gifts, and it is known that in some cases money has been spent on buying necessities suitable for the winter.

May I conclude with thanking you, Mr. Editor, for the support you gave to the appeal.

Yours sincerely,
J. W. Brittlebank,
President.

Victoria Veterinary Benevolent Fund,
18, Victoria Avenue,
Harrogate.

December 30th, 1940.

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PARLIAMENT AND DISEASES OF DAIRY STOCK

To the Editor of the Veterinary Record

Sir,—The Editorial, appearing in the *Veterinary Record* of December 28th under the above title, lit in my heart a flame of hope upon which a brief perusal of the Parliamentary News, published in this same issue, played as a thin but extremely cold jet of water.

Far be it from me to discount the advantages Mr. Hudson derived from his week-end visits to Research Institutes, but I venture with all respect to hint that he is almost wasting time when our national emergency leaves us none to spare. After several conversations with members of the Survey Committee I have been deeply impressed by the advances in the application of research work that some of our colleagues have made.

I am forced to the conclusion that it is lack of application of known methods of control rather than lack of research that is responsible for the terrible loss and wastage among our dairy stock, and this at a time when the profession is largely standing by with the knowledge and means of preventing the diseases responsible for such loss. If this is accepted, then I believe it must be hammered into the powers that be by editorial and every other conceivable means.

Surely a series of meetings between Mr. Hudson and members of the Survey Committee would result in the foundation of some practical scheme by which this laboriously acquired knowledge may be used instead of wasted.

Yours faithfully,
S. F. J. Hodgman.

101, Bromley Road,
Shortlands,
Kent.

December 31st, 1940.

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STRAINED TENDONS AND THEIR TREATMENT

To the Editor of the Veterinary Record

Sir,—Mr. Irving makes such remarkable statements in his last letter and so misquotes my remarks that I feel bound to ask your indulgence again. It would perhaps simplify the discussion if one uses the term draft horses when wishing to refer to a horse working in a cart in contradistinction to a riding horse, and that is what I wished to convey when I mentioned Mr. Hunting's experiment. It is interesting to note, however, that "A good many light trotting vanners went lame from bowed tendons," although Mr. Irving says that "With cart-horses the flexor tendons are seldom, or I might say, never strained." In this connection Mr. Irving quotes me as saying that "Long rest is the *only* treatment," but what I actually said was, "I must agree that the results of firing in these are *not so effective* as in thoroughbreds and hunters, and that a long rest if it can be given is a better treatment"—a very different statement.

I regret that space will not allow me to give the full histories of the three horses about which I wrote brief details, as these were all well-known animals and it would make rather fascinating reading, but in reply to Mr. Irving's contention that it was rest and not firing that cured these horses, I can briefly state (*a*) that Horse No. 1 had twice as long continuous rest before firing as he had after firing; (*b*) No. 2 (the Grand National horse): Mr. Irving has for purposes of his argument left out one year's continuous rest which he had following a previous rest of about the same period with a short interval between. After firing he had about nine month's rest only. So it was not the enforced rest that was responsible for the recovery of either of these animals; (*c*) Horse No. 3 only had a few weeks rest after firing whereas he was blistered and rested for a considerable time previously—one reason being that as he was wanted for the Derby and other races there was no time to spare and another that I considered the legs would best respond by not allowing the horse to lose his muscle. Mr. Irving cannot understand this line of treatment, but some of my most successful cases have started walking exercise a few weeks after firing; this is gradually increased, then walking and trotting is given until the legs become hard, later half-speed canters and finally the horse can be galloped. In this way, the animal does not lose condition and by the time the legs have got hard the horse is half fit.

On the question of sprains being secondary to some other diseases such as ringbones and sidebones, Mr. Irving does not appear to realise that if there is a painful condition in one leg the horse puts more weight on the opposite leg, so increasing the tendency to sprains in the supporting leg; this is in addition to the interference with the true action of the affected leg. He does not believe, however, that cart horses have sprained flexors. I can only say that I can show him some cases almost any day and so can other veterinary surgeons and owners. Especially is this the case in the hind legs with horses pulling heavy loads. I submit, therefore, that this statement is contrary to facts as is the one relating to firing on the Continent, unless all the fired horses were sent to this country previous to his visit, but probably Mr. Irving was chiefly concerned with draft horses when staying on the Continent. As is well known to veterinary surgeons attending race-horses and to trainers, a large proportion of French

race-horses are fired before they come over, usually when quite young. It might be called preventive firing, as it is done to strengthen any weakness in conformation. Very often the firing is round the knees, hocks and back tendons, sometimes the fetlocks and pasterns and occasionally the stifles. Both point and line firing are used and it is very dexterously done, the lines being rather closer than in the usual English method; in fact, I have often been able to tell a French horse by the appearance of the firing marks.

Another statement he makes must be challenged: "I have also been told by a veterinary surgeon that the use of the firing iron was not taught, and any firing in this College was done by one of the College grooms." Either this should be authenticated or immediately withdrawn as I cannot conceive any of our Colleges allowing a groom to do this operation. It would be a matter for the Royal College of Veterinary Surgeons.

Lastly, we come to the vexed questions, Do sidebones cause lameness? What effect have sidebones on strained tendons? Mr. Irving says "I have never found them cause lameness," but evidently the French professor whom he is "inclined to believe" knew that strained tendons occurred in cart-horses, for he "went into the cause of strained tendons and ligaments in the heavy horse" and said that horses with sidebones "never got strained tendons"—they prevented it "as they acted as a rivet between the hoof and the pedal bone." So now what are we to believe, that heavy horses never get strained tendons or only those that have no sidebones?

I am well aware of Mr. Hunting's and Prof. Macqueen's *obiter dictum*, but during the best part of a lifetime spent chiefly in examining horses for soundness and treating lame ones it has been my endeavour to try and elicit the facts. A great many sidebones cause no lameness, especially to horses working at a comparatively slow pace and on fairly soft ground, but horses doing fast work on hard roads certainly go lame as I have proved by X-ray in the living animal and by boiling out the bones after death, when there was no evidence of any other disease of the foot or pastern. One only has to examine some sidebones in dead animals with their excrescences, roughness and deformities to realise that the sensitive structures in the foot must be pressed upon and squeezed between the sidebone and the foot wall. In white hoofs I have often seen bloodstaining on the wall over the sidebone and it was only by sectioning the hoof that this pressure could be relieved and the horse rendered serviceable again.

If one studies the structure and functions of the hoof it is realised what a wonderful work of nature it is, almost as marvellous as the eye itself, and to speak of a rivet in this connection seems rather like sacrilege. One of the functions of the lateral cartilages is to give elasticity to the back of the hoof, so preventing concussion and squeezing of the sensitive structures. Sidebones lessen the elasticity, so shorten the stride, and if fast work on hard ground occurs concussion and bruising take place, affecting not only the sensitive laminae but the sensitive sole, so there is often a corn when sidebones are present. I have the bones of a well-known and brilliant hunter which was sold for about £400. When I examined him for soundness he had sidebones which I pointed out, explaining the risk in giving such a large price. The horse lost his action and was sold, the buyer being told of the sidebones. Later he went lame, there was a legal action and afterwards the horse was sold to me. The hoof was sectioned, after which he went sound and I hunted him for two seasons, but later he could not stand road work and in spite of all kinds of treatment he had to be put down. There was no trace of any other disease in the bones and it was obvious during life where the pain was situated.

Another well-known and very valuable horse, with a trace of the "hairy heel," developed lameness from sidebones. This animal was seen by several veterinary surgeons and X-ray plates were taken, which I have just been examining again and there is no trace of any other disease. The horse was lame for about a year, but after treatment of the hoof and coronet he became sound. Many more cases could be quoted but space will not permit.

I have satisfied myself that sidebone lameness does occur quite frequently—more so in riding horses than in draft horses, but even in these it is not uncommon. I am also satisfied that strain of the flexor tendons does commonly occur in cart-horses and that sidebones and strained tendons may be present in the same animal.

Yours faithfully,

GEO. P. MALE.

Westcroft,
Earley,
Reading.

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STANDARDISATION OF BIOLOGICAL PRODUCTS

TO THE EDITOR OF THE VETERINARY RECORD

Sir,—We sympathise with the view expressed by Mr. Hall Masheter in his letter of the 9th inst. that we should name the firms producing inefficient lamb dysentery sera. (*Vet. Rec.* **52**. 843.) There are, however, certain reasons why we consider it inadvisable to take this course. In the first place it was never our intention to indicate those firms producing inefficient or efficient lamb dysentery sera; on the contrary, our sole object was to show, once again, the urgent need for official control and standardisation of various biological products. Inefficient products are being sold, in many cases quite without the knowledge of the producer, for the very reason that official control is lacking. Again, under existing conditions, we have no guarantee that all batches produced by the same manufacturer will reach the same potency. It will be recalled that there were two sera (brands 7 and 8) which could, with certainty, be regarded as quite useless for the control of lamb dysentery. The manufacturers of these sera were approached and since sending our article for publication we have had the opportunity of testing samples of new sera which these firms are producing. The test has shown that the manufacturers of brand No. 7 have now produced a serum of potency 500 "units" Type C and 80 "units" Type D, while those of brand 8 are marketing a serum of potency 450 "units" Type C and 45 "units" Type D. These sera, therefore, though much less potent than the standard are now of a potency commensurate with the brands 1, 2 and 3 originally tested. In addition, the manufacturers of brand No. 3 have, we believe, taken steps to increase the potency of their product, particularly in Type D content. Since the manufacturers have taken the trouble to improve their products in this way it will be agreed that it would be unfair to publish their names in connection with the original sera.

While re-affirming our plea for legislation for the control of veterinary biological products, we consider that much could be done pending such legislation by inviting manufacturers to co-operate in ensuring a standard minimum potency for their products. In the meantime, however, there is nothing to prevent a veterinary surgeon ascertaining by discreet questioning what evidence a firm has of the potency of its product. Are we as a profession, moreover, too weak to demand official control and standardisation, which would undoubtedly be welcomed by most producers?

Yours faithfully,

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